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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
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10/098,585

03/15/2002

Markus Duelli

18-3 US

3242

27975

7590

05/14/2004

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EXAMINER

WOOD, KEVIN S

ART UNIT

PAPER NUMBER

2874

DATE MAILED: 05/14/2004

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

10/098,585

Applicant(s)

DUELLI ET AL.

Examiner

Kevin S Wood

Art Unit

2874

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --
Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 19 April 2004.
- 2a) ☐ This action is FINAL. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-6 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-6 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 15 March 2002 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
- ☐ Certified copies of the priority documents have been received.
 - ☐ Certified copies of the priority documents have been received in Application No. _____.
 - ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☐ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
Paper No(s)/Mail Date _____

- 4) ☐ Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: _____

DETAILED ACTION

Response to Amendment

1. This action is responsive to the applicant's amendment filed on 19 April 2004. None of the claims have been amended or cancelled. No new claims have been added. Claims 1-6 are now pending in the application.

2. The declaration filed on 19 April 2004 under 37 CFR 1.131 is sufficient to overcome the Reed et al. reference (U.S. Patent No. 6,542,665).

3. Applicant's request for reconsideration of the finality of the rejection of the last Office action is persuasive and, therefore, the finality of that action is withdrawn.

Response to Arguments

4. Applicant's arguments with respect to claim 1-6 have been considered but are moot in view of the new ground(s) of rejection.

Claim Rejections - 35 USC § 103

5. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

6. This application currently names joint inventors. In considering patentability of the claims under 35 U.S.C. 103(a), the examiner presumes that the subject matter of the various claims was commonly owned at the time any inventions covered therein

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were made absent any evidence to the contrary. Applicant is advised of the obligation under 37 CFR 1.56 to point out the inventor and invention dates of each claim that was not commonly owned at the time a later invention was made in order for the examiner to consider the applicability of 35 U.S.C. 103(c) and potential 35 U.S.C. 102(e), (f) or (g) prior art under 35 U.S.C. 103(a).

7. Claims 1 and 4-6 are rejected under 35 U.S.C. 103(a) as being unpatentable over U.S. Patent No. 6,445,939 to Swanson et al.

Referring to claim 1, Swanson et al. discloses a fiber-optic optical coupling assembly including: a first optical waveguide (1) having a first terminal end; a graded index lens (2), wherein the first terminal end of the graded index fiber is in optical communication with the first terminal end of the first optical waveguide whereby an optical beam propagating from the first terminal end of the first optical waveguide and exiting the second terminal end of the graded index fiber is reduced to a diameter (waist) at a distance from the terminal end of the graded index fiber. In Fig. 3, Swanson appears to disclose a beam spot size (beam diameter) of less than 30 microns (approximately 20 microns) at a distance of more than 220 microns (approximately 1500 microns) using a graded index (GRIN) lens having a radius of 183 microns. Swanson also specifically discloses that a GRIN lens made by the disclosed method can achieve a beam waist radius size of about 30 microns an nearly 2000 microns from the distal end of the GRIN lens (see col. 10, lines 44-47). Swanson et al. does not appear to specifically disclose the GRIN lens (2) is a section of graded index fiber. It would have been obvious to one having ordinary skill in the art at the time the invention was made

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to use a GRIN lens instead of a section of graded index fiber, since the examiner takes Official Notice of the equivalence of a GRIN lens and a section of graded index fiber for their use in the optical coupling art and the selection of any of these known equivalents to shape an output light beam would be within the level of ordinary skill in the art.

Referring to claim 4, Swanson et al. discloses a fiber-optic optical coupling assembly including: a first optical waveguide (1) having a first terminal end; a graded index lens (2), wherein the first terminal end of the graded index fiber is in optical communication with the first terminal end of the first optical waveguide whereby an optical beam propagating from the first terminal end of the first optical waveguide and exiting the second terminal end of the graded index fiber. Swanson et al. does not appear to specifically disclose that the graded index lens has an index of refraction gradient characterized by a change in refractive index of less than about 0.009 over a core diameter of about 80 microns. It would have been obvious to one having ordinary skill in the art at the time the invention was made to design the graded index fiber to have a suitable index of refraction gradient over a certain core diameter, since it has been held that where the general conditions of a claim are disclosed in the prior art, discovering the optimum or workable ranges involves only routine skill in the art. In re Aller, 105 USPQ 233. See Fig. 4A and Fig. 4B, along with their respective portions of the specification of the Reed et al. reference.

Referring to claim 5, Swanson et al. discloses that the graded index fiber (16) has an angle cleaved at an angle of 2 degrees. See Fig. 6.

Referring to claim 6, Swanson et al. does not appear to disclose an anti-reflection coating at the second terminal end of the gradient index fiber. Anti-reflection coatings are known in the art and are commonly used to minimize optical losses. It would have been obvious to one having ordinary skill in the art to utilize an anti-reflection coating on the graded index fiber to minimize optical losses due to reflection.

8. Claims 2 and 3 are rejected under 35 U.S.C. 103(a) as being unpatentable over U.S. Patent No. 6,445,939 to Swanson et al. in view of U.S. Patent No. 6,594,419 to Ukrainczyk et al.

Referring to claims 2 and 3, Swanson et al. discloses that a thin glue layer may be used between the waveguide (1) and the graded index lens (2). However, Swanson et al. does not specifically disclose that the glue is index matching. Ukrainczyk et al. discloses a similar coupling assembly where an index matching epoxy is placed between a waveguide (2) and a graded index fiber (4) for the purpose of attaching the two waveguides together. Since Swanson et al. and Ukrainczyk et al. are both from the same field of endeavor, the purpose disclosed by Ukrainczyk et al. would have been recognized in the pertinent art of Swanson et al. It would have been obvious to one having ordinary skill in the art at the time the invention was made to utilize an index matched epoxy spaced between the waveguide and the graded index fiber for the purpose of attaching the waveguide to the fiber and limiting optical losses. See Fig. 4 and its respective portion of the specification of the Ukrainczyk et al reference.

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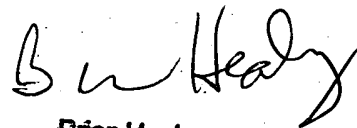
Conclusion

9. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Kevin S Wood whose telephone number is (571) 272-2364. The examiner can normally be reached on Monday-Thursday (7am - 5:30 pm).

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Rodney B Bovernick can be reached on (571) 272-2344. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

KSW



Brian Healy
Primary Examiner